DREN Provides TARDEC's Computing Power

Michael D. Kaplun

The Defense Research Engineering Network (DREN) is a nationwide, robust, high-capacity, low-latency computer network created in the late 1980s to further crucial military research and development (R&D) projects. Operated by the Department of Defense (DOD) High Performance Computing Modernization Office (HPCMO), DREN supports DOD- and Army-wide R&D initiatives while providing digital, imaging, video and audio data transfer services between defined service delivery points.

TARDEC Associate Jonathan Bence manages the network from a console workstation, TARDEC's heart to DREN connectivity. (U.S. Army TARDEC photos by Bill Dowell.)

"DREN is a technology enabler. It provides a viable conduit to the Army for collaboration among the research, hardware and software development, engineering and testing communities."

TARDEC Associate Jonathon Smereka checks network server connections. DREN connectivity is TARDEC's conduit for high-speed DOD technology transfer.

DREN was originally used to connect Defense Supercomputing Research Centers (DSRCs) and 17 other smaller distributed computer centers. Today, there are four Defense Research Centers — two for the Army (Army Research Laboratory and Engineer Research and Development Center), one for the Air Force (Air Force Research Laboratory) and one for the Navy (Naval Oceanographic Office). Several distributed centers have been removed from the DOD HPCMO, but many, such as TARDEC, have maintained their DREN connectivity to interact with DSRCs and other partners.

"DREN is a technology enabler," remarked TARDEC Team Leader Ted Currier. "It provides a viable conduit to the Army for collaboration among the research, hardware and software development, engineering and testing communities." As the backbone of TARDEC's laboratory environment, DREN enables high-performance computing (HPC), embedded simulation labs, ground vehicle simulation labs, advanced collaborative environments and systems integration labs to establish and connect simulation and test environments. This connection allows for real-time modeling and simulation experiments, as well as high-end computational analyses supporting DOD- and Army-wide strategic initiatives. Through DREN, TARDEC is able to partner and collaborate with other U.S. Army Research, Development and Engineering Command laboratories linked together by the network. "Much of TARDEC's broadband efforts would not be possible without the interconnection fabric of DREN," Currier affirmed. "This is why the network was created and has flourished."

Today, there are many other laboratories, agencies and testing facilities with DREN connectivity to perform research, development and testing (RDT). TARDEC's DREN operation hosts approximately 150–200 workstations throughout the center and several larger systems, such as supercomputers and HPC systems. These supercomputing systems and other DREN systems are accessible to anyone working within Army RDT and evaluation programs, in accordance with standard DOD computer use policies.

Through DREN's active technological engagement, TARDEC is on the forefront of leading-edge connectivity and technology transfers across DOD. The center's position ensures enhanced technological capabilities exist in and out of the network.

TARDEC Associates Jonathan Bence (standing) and Dan Kedziorek verify proper connections in a station network rack. Proper connections are vital to DREN operability.

Here, Kedziorek traces Ethernet wire connections in a network rack. Ethernet wires are plugged in for each line to connect computers to the network server.

Michael D. Kaplun is a Writer/Editor with BRTRC and provides contract support to TARDEC's Strategic Communications team. He holds a B.A. in English and media and society from Hobart and William Smith Colleges.